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ABSTRACT

In order to see if an extended-day kindergarten program has a greater effect than a half-day kindergarten program on reading achievement in the first-grade, a study compared standardized test scores of two different groups of first-grade students. Subjects, a group of 44 students who had participated in a half-day kindergarten program and a second group of 80 students who had participated in an extended-day kindergarten program, were administered the Science Research Associates Achievement Series (SRA). Results indicated that the scores of the children in the extended-day kindergarten were higher than the scores of the children in the half-day kindergarten program, although the difference in scores was not statistically significant. (A table of data is included, and 13 pages of a related research review, 23 references, and an appendix containing the subjects' SRA scores are attached.) (JK)

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Half-Day Kindergarten Versus Extended-Day Kindergarten And Its Effect on First-Grade Reading Achievement

by
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Presented in Partial Fulfillment
of the Requirements for the Master of Arts Degree

Kean College of New Jersey

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Abstract

This study, conducted in the West Paterson Public Schools, compared standardized test scores of two different groups of first-grade students. The first group of forty-four students participated in a half-day kindergarten program. The second group of eighty students, whose scores were examined, participated in an extended-day kindergarten program. It was hypothesized that children involved in a half-day kindergarten program would not demonstrate greater reading achievement in the first-grade when compared to those who have been involved in an extended-day kindergarten program.

An analysis of the data indicated that the scores of the half-day kindergarten sample were lower than the scores of the extended-day sample, although the difference in scores was not statistically significant. The findings of this study support the hypothesis.

Acknowledgements

I would like to express my appreciation to my family and to my special friend, Suzy, for their constant understanding and support while I worked on this thesis.

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Early childhood education plays an important role in developing the cognitive skills necessary for reading and writing. In the past, formal early childhood education began in kindergarten. Today the pre-kindergarten program has taken over this role of providing children with their first school experience. About half of the children who enter kindergarten today have received some type of pre-kindergarten school experience, compared to a small minority of kindergarteners a decade or two ago (Golladay and Noell, 1978). Those who have pre-kindergarten experience have developed socially, emotionally, and physically, and have developed many of the cognitive skills necessary for formal classroom activities. Children who have not attended a pre-kindergarten program need to be exposed to activities that are common at the pre-school level before they are ready for formal training. As a result, today's kindergarten must take on a more demanding role to accomodate each child's needs. It must provide remediation of early learning problems as well as individualized instruction. This new role of kindergarten requires more instructional time than a half-day program can offer.

The early years of a child's life are important in building the foundation for later school learning. The half-day kindergarten program is not able to provide identification and remediation of learning deficits. An extended-day kindergarten program is needed to provide individualized instruction.

Children who participate in an extended-day kindergarten program might demonstrate greater reading achievement in the first-grade than those who have participated in a half-day program.

A limited number of studies comparing the full-day, everyday kindergarten with the half-day, everyday kindergarten have been done. Heiman and Gastright (1975) found a positive relationship between test scores and the amount of time students participated in pre-kindergarten and kindergarten classes. Students with preschool and full-day kindergarten experience scored higher than students with preschool and half-day kindergarten experience using five different standardized tests.

A study by Winter and Kline (1970), comparing half-day kindergarten and an extended-day kindergarten for advantaged and disadvantaged students, reported that the achievement of students in the extended-day program far exceeded the achievement of half-day students on the Stanford Primary Test Battery.

In a more recent study Humphrey (1980) found that students enrolled in a full-day kindergarten achieved significantly higher scores on the California Achievement Test as compared to students enrolled in a half-day program. Follow-up testing, when the students were first-graders, indicated significantly higher reading scores for the students who had attended the full-day kindergarten compared to those who had attended half-day.

The need for an extended-day kindergarten appears to be evident, but insufficient evidence exists to sway school systems to offer such programs.

Hypothesis

To provide additional evidence on this topic the following study was conducted. It was hypothesized that children involved in a half-day kindergarten program would not demonstrate greater reading achievement in the first-grade when compared to those who have been involved in an extended-day kindergarten program.

Definitions

For the purpose of this study, a half-day kindergarten program was defined as one in which the child attends school everyday for two and one-half hours each day. The extended-day kindergarten program is one in which the child attends school everyday for six hours each day.

Procedures

The research was conducted in the West Paterson Public Schools, which are located in a middle-class suburban community in North Jersey. A study was done which compared standardized test scores of two different groups of first-grade students, using the Science Research Associates Achievement Series (SRA). The first group of students whose scores were examined was the first-grade class of 1985 which consisted of forty-four students. These students, who made up the entire first-grade population in the district, participated in a half-day kindergarten program.

The second group of students whose scores were studied was the first-grade class of 1986 which consisted of eighty students. These students, also from all the schools in the district, participated in an extended-day kindergarten program.

The SRA Reading scores of every first grade student in the school district in 1985 and 1986 were examined. The first-graders of 1985 were the last group of students to attend a half-day kindergarten program in West Paterson. Therefore, the first-graders of 1986 were the first students to participate in the extended-day kindergarten program. Both groups of children were instructed in the Economy Reading Program, and were given the first-grade SRA Test after eight months of first-grade.

These reading scores were compared in order to find out if the first-graders who were involved in the extended-day

kindergarten demonstrated greater reading achievement over those first-graders who were involved in the half-day kindergarten program.

Results

The national percentile scores (Reading scores only) of the Science Research Associates Achievement Series (SRA) were studied to determine the relationship between first-graders who participated in a half-day kindergarten program compared to first-graders who participated in an extended-day program. The mean scores and standard deviations were calculated for each group. A *t* was computed in order to determine if there were any significant differences in scores between the mean achievement of the two samples.

Table One illustrates these findings. They show that

Table I

M, SD, and *t* of Half-Day Versus Extended-Day Kindergarten in Reading Achievement

Samples	M	SD	t	Sig.
Half-Day Kindergarten	74.95	21.39	1.64	NS
Extended-Day Kindergarten	80.04	18.27		

the mean score of the half-day kindergarten sample was lower than the mean score of the extended-day sample. Utilizing statistical tests to determine the significance of mean differences, a t of 1.64 was computed. This t indicates no significant difference between achievements of the samples, though there is a mean difference in favor of the extended-day sample.

Conclusions

The findings of this study support the hypothesis that children involved in a half-day kindergarten program would not demonstrate greater reading achievement in the first-grade when compared to those who have participated in an extended-day kindergarten program. It would seem from the data that extending the day for kindergarten children has a positive, though not statistically significant, effect on first-grade reading achievement. This conclusion agrees with that of Humphrey (1980) who completed a similar study.

A future study is suggested to determine whether the greater reading achievement for the extended-day group can be attributed only to the extension of time in the kindergarten. This future study should include not only the amount of time spent in a kindergarten program, but it should also consider preschool experience, as in the study done by Neiman and Gastright (1975). A preschool readiness program which develops auditory and visual discrimination skills, encourages oral language, and stimulates an interest in

reading, could certainly effect achievement in reading in the first-grade.

Results of this study indicate that extension of the day in a kindergarten program may be an important factor, one which contributes to greater reading achievement in the first-grade.

Half-Day Kindergarten Versus Extended-Day Kindergarten: Related Research

Kindergartens began as all-day programs of education for the five-year-old (Gorton and Robinson, 1968). Customarily, in the United States, the extended-day or full-day was typical for kindergarten children. Often these experiences were in rural one-room schools, where the youngest child attended the same length of day as any other child.

The half-day program developed primarily in response to the need to accommodate larger numbers of children and to reduce costs (Gorton, 1968). Apparently, World War II influenced a cut-back to half-day kindergartens. Not only was there an increased birth rate, but also a shortage of classroom building space. Since men were in the armed services, there was also a shortage of teachers.

All-day kindergarten surfaced again in the 60's and 70's. The U.S. Department of Health, Education, and Welfare reports in the 1969-70 school year, 13.8% of children enrolled in kindergarten were attending full-day (Barker, 1971). Many of these programs were in Hawaii, which had all-day everyday kindergartens since 1955 (Gorton, 1968).

Many other countries in the world have all-day everyday schools for the child of kindergarten age. The British Infant School has such a pattern for children ages 4 to 5. In Belgium, 90% of the children 3 to 5 years of age attend school from 8:30 to 4:15 (Oelerich, 1979). In France, children 2 to 5 years of age attend school for 6 hours per

day; 23% of the two-year-olds, 70% of the threes, 93% of the fours, and 96% of the fives are enrolled in these programs (Tizard, 1976). Kindergarten programs in Russia are scheduled from 7:30 a.m. to 7:00 p.m. (Weaver, 1971).

In recent years, there has been an acceptance of the idea that some academic training could be started before first grade. Therefore the readiness programs have gradually been worked into many kindergarten curriculums. But this half-day kindergarten program is very inadequate in meeting the real needs (Gorton, 1969). Full-day kindergarten is needed.

Gorton viewed the full-day kindergarten as being essential to the implementation of more involved curriculum. The full-day setting would provide time for more well-developed programs in language development, science, mathematics, social sciences, music and creative physical movement. Many of these areas are included in the half-day programs, but time limitations make them very ineffective. The school lunch program was also seen as a learning experience of value which the full-day kindergarten setting could offer. The flexibility of scheduling in a full-day program is of great value to the teacher. This would allow for shorter but more frequent reinforcement of a concept.

The staff of the Fort Myers School in Arlington, Virginia, developed a set of "Long-range Goals for Full-day Kindergarten" which are worthy of note (Gorton, 1969):

1. Help the child explore the world of people and things.

2. Help the child toward self-development in: human relationships, independence, self-control, and cooperation.
3. To develop conceptualization (to think and reason, classify and categorize, learn cause and effect relationships).
4. To challenge the child intellectually in areas of language, science and math, and the social sciences.
5. To develop creativity in the child through a variety of experiences.
6. To give attention to the physical development and well-being of the child.
7. To provide opportunity to study the child, identify his strengths and weaknesses, and work to enrich the child's program and build from his weaknesses.

One of the most important considerations in any type of kindergarten program is whether the child receives instruction at his or her appropriate level (Naron, 1981). In full-day kindergarten the teacher has the time to diagnose weaknesses and alter the instruction accordingly. As a result, each child can experience success, develop positive attitudes about learning, and may less frequently require remedial instruction.

In a review of Piagetian theory, Ginsberg and Opper (1969) emphasized the importance of appropriate experiences as the child progressed through various stages of learning. Ginsberg and Opper stated that the child should be allowed the opportunity to "apply their intuitive understanding to subjects covered in school". Consequently, the task of the teacher is more demanding in that she must be aware of each student's stage of intellectual development in order to provide the most appropriate learning experiences. A full-day kindergarten program provides time for more individualized

attention to accomplish this task of identifying each student's developmental stage and providing appropriate learning experiences.

Kindergarten teachers appear overwhelmingly to prefer a full-day kindergarten program to two half-day sessions (Ross, 1976). Harris (1969) points out that it is very difficult for a teacher to meet the needs and interests of two groups of children in one day, and that to attempt to do so is physically and mentally exhausting. One teacher in a half-day program commented, "Just as I was getting somewhere with a child, the session would end" (Mouw, 1976). Teachers who taught in the full-day program in that study reported that they were able to use the additional time to work more with individual students, and that they were no longer forced by the schedule to put some children in overcrowded groupings.

Even in the study by Johnson (1974), which reported no significant differences in achievement between kindergarteners in a full-day program and those in a half-day program, the school decided with full knowledge of the results to continue the full-day kindergarten program. This decision was based on the favorable response to the program from both parents and teachers.

An often-stated opposition to extended-day kindergarten is based on parents' fear that the school will replace the home (Hess and others, 1978). However, extended-day kinder-

garten can create a close communication between home and school. Kindergarten began in the United States as a full-day program with the afternoon devoted to parent conferences and home visits. But as the half-day programs took over, teachers were forced to eliminate these visits with parents. As a result, the relationship between the kindergarten teacher and the parent suffered (Ross, 1976).

The importance of parental involvement is stressed in today's full-day kindergarten. Two studies that reported significant gains for children attending full-day over half-day kindergarten involved parents extensively in the instructional process (Winter and Klein, 1970; Alper and Wright, 1979). Parents often prefer full-day over half-day kindergarten for reasons of convenience: arrangements for the children's transportation, babysitting, and parents' daily routine are all facilitated, according to the study.

Are the children physically and psychologically able to adopt to an extended-day kindergarten program? This concern was addressed by Winter and Klein (1970) who reported that signs of fatigue, frustration, or waning interest in school simply did not appear in their experimental children. Similarly, in a study by Humphrey (1980), and examination of attendance patterns indicated no differences in absenteeism of children attending the full-day compared to the half-day program. A much higher percentage of children in the extended-day program in the Winter and Klein study were reported to experience very positive feelings about school than

the children in the half-day program did.

Nieman and Gastright (1981) conducted a longitudinal study in the Cincinnati public schools which showed a positive relationship between test scores and the amount of time students participated in preschool and kindergarten classes in September 1970 in 16 Cincinnati schools that were receiving Title I aid. Of the total group, 410 were enrolled in all-day kindergarten classes that met five days each week. Most of these students attended preschool. The other 141 were enrolled in half-day kindergarten classes that also met five days each week. The majority of these students had not attended preschool.

All 551 students were pretested with a kindergarten assessment instrument called the Kindergarten Goal Card. They took the Boehm Test of Basic Concepts in December. In April, while still in kindergarten, many of the students also took the Metropolitan Readiness Test.

The half-day and full-day kindergarten groups did not differ on the Kindergarten Goal Card (Pretest). However, after only three months of kindergarten, the all-day students scored higher than the half-day students on each of the four subtests of the Boehm Test of Basic Concepts. The Metropolitan Readiness Test showed significant differences in favor of the all-day kindergarten group. The mean raw score for the all-day kindergarten group was 42, compared with a mean raw score of 23 for the half-day kindergarten group.

In April 1975, when these students were in the fourth-grade, and again in April 1979, when they were eighth-graders, their reading and mathematics subtest scores on the Metropolitan Achievement Test were compared. The all-day kindergarten participants showed significantly higher scores than the half-day students in both fourth-grade and eighth-grade.

Alper and Wright (1979) reviewed the Extended-Day Kindergarten Program piloted in the Phoenix School System and commended the project's success. The goal of the three month pilot was "to provide more time for individualized and instructional activities and to increase parent participation in instruction" (Gorton and Robinson, 1968). Some features of the extended-day program were decreased class size, participation in the lunch program, and home visits by the teacher. Not only was the original goal attained, but also the extended-day students scored significantly higher on the Metropolitan Readiness Test. Parents involved in the program expressed positive opinions concerning the extended-day kindergarten. In an evaluation of the Phoenix Extended-Day Kindergarten Pilot Program, Woods (1977) found the major strengths of the program to be parental involvement as well as a better understanding of the children by both teachers and parents.

Eugene P. Adcock and others (1980) conducted a study to determine the academic effects of the length of school day on kindergarten children. A total of 189 kindergarten children from both rural and urban communities in Maryland participated

in this study. The children were divided into two groups--the study group consisting of 131 children from five classes who attended class for a full school day, and the control group consisting of 58 children from three classrooms who attended class for the half-day program.

A Survey Battery of the Metropolitan Achievement Tests (1978) was administered to kindergarten children in the sample by their teachers at the beginning (fall, 1978) and at the end (spring, 1979) of the school year. Both levels of the Basic Survey Battery used in this investigation were part of a larger range of tests which yielded one score in reading, mathematics, and language, as well as a total battery score.

The result of this study is that the full-day kindergarten group scored significantly higher than the half-day control group. This result demonstrated that children who attended a full-day kindergarten program achieved higher levels of academic skills in math, reading, and language than children who attended a half-day session.

A study was conducted by the project staff of the Amherst Elementary School in Amherst, Wisconsin to determine which of three types of kindergarten programs would be most advantageous to the School District of Tomorrow River (1980). The programs investigated were full-day daily, full-day alternate-day, and half-day daily. Questionnaires were sent to teachers and principals of selected schools in Wisconsin and to a few school districts selected randomly from

throughout the country. Questionnaires were also sent to parents of children who would be entering kindergarten within the next three years. A total of 150 teacher questionnaires, 75 principal questionnaires, and 158 parent questionnaires were sent. Information concerning the three kindergarten programs was gathered during visits to five school districts in Wisconsin, Ohio, and Minnesota.

Based on the survey data and the visits it was concluded that the full-day program is advantageous in many ways. It allows for more instructional time for students, more time for implementing special subjects (art, music, physical education, etc.), and better prepares children for first-grade than the other programs. It also allows children to be involved in all-school functions such a special assemblies, lunch programs, etc., and eliminates the cost of mid-day busing. Nearly 100% of the parents, teachers, and principals involved with a full-day program favored it.

Winter and Klein (1970) conducted a study that examined an extended-day kindergarten program in conjunction with an individualized curriculum. Two pilot studies were conducted in a large suburban school district, using kindergarteners from four of 17 elementary schools. Two of the schools served middle-class families; the other two served lower-class families and were eligible to receive Title I funds. On the basis of standardized tests and teacher ratings, one group of kindergarteners was identified as educationally advantaged and most ready for kindergarten instruction; the other group

was identified as educationally disadvantaged and least ready for kindergarten instruction.

All of the students attended the regular kindergarten program in the morning. In the afternoon, the experimental groups received an additional 90 minutes of structured activities that differed according to individual needs. The additional time for the disadvantaged group was used to diagnose the children's difficulties and to alter their lessons accordingly. For the advantaged group, the additional 90 minutes was used for creative approaches to learning depending on children's individual interests.

An analysis of the performance of both groups indicated positive effects of the extended-day individualized program for both types of children. The disadvantaged experimental group performed significantly better than the control group on the Metropolitan Readiness Test, the Lee-Clark Achievement Test, and the Stanford Achievement Test. The advantaged experimental group did not perform significantly better than the control group on these measures. But their reading levels at the end of kindergarten were exceptional compared to the controls.

Follow-up test results at the end of first-grade, using two different forms of the Stanford Achievement Test indicated even more positive effects of the extended-day kindergarten program. The disadvantaged experimental students exceeded the control group by nearly three stanine units. The advantaged experimental students exceeded their control group

by more than one grade equivalent unit. The results of this study indicate that the extended-day kindergarten program with individualized curricula produces differences in academic achievement as compared to the half-day kindergarten program.

Unlike the previous studies, Hatcher, Schmidt, and Cook (1979) conducted a study which found no significant differences between the achievement of kindergarteners attending a full-day and those attending a half-day program. Students' achievement was assessed by standardized instruments evaluating cognitive, affective, and psychomotor development. However, Haron (1981) states that this study "did not address tailoring the instructional program to the individual needs of the children" and that the study "appears to compare an ordinary curriculum in a half-day program with the same curriculum stretched to fill a full-day". Further investigation of the program was recommended.

Similar to the results of the study by Hatcher, Schmidt, and Cook, Johnson also found no significant differences in achievement between students in a full-day kindergarten program and students in a half-day program (1974). Johnson compared student achievement in full-day and half-day kindergarten classes in the Princess Anne Elementary School, Princess Anne, Maryland.

Two kindergarten classes consisting of twenty students each were evaluated using standardized tests at three different times during the study. The results of the study showed

no statistically significant differences in achievement levels of the two groups. However, Johnson stated that "not all significant or valid goals of education are easily measurable, and it is quite conceivable that local conditions and certain specific goals might warrant full-day kindergarten" (1974).

In examining the validity of Johnson's study, Naron states:

> "In the Johnson study, the purpose of full-day kindergarten is described as providing opportunity for play out-of-doors both morning and afternoon, often a full hour of it during each period...It is not surprising that extended 'babysitting' time does not affect a child's achievement. It is the way time is used that is important." (1981)

Public support for full-day kindergarten has been expressed by the National Association for the Education of Young Children, the American Federation of Teachers, the Council of Chief State School Officials, and the American Association of School Administrators (Hess and Others, 1978). Urie Bronfenbrenner (1976) has recommended that expanded kindergarten be made an "integral" part of the full public schools' curriculum, and that only with the implementation of a massive, publicly administered program can this be done successfully. In August 1970, the American Association of Elementary-Kindergarten-Nursery Educators submitted a resolution that "a full-day kindergarten be available to all children, organized flexibly to accommodate the needs of kindergarten children and teachers" (Winter and Klein, 1970).

As Johnson points out:

> "A child's first six years are important ones in which a lasting impression is created upon individual intelligence, personality, and physical and mental growth: therefore, the public rightfully can demand the best possible education in those crucial years. This must include the availability of a sound full-day kindergarten program..." (1974).

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Appendix

DRA Scores of Half-Day Kindergarten Sample

2[illegible]	35
2[illegible]	60
76	95
91	89
51	99
99	74
74	79
15	81
[illegible]5	99
[illegible]3	48
[illegible]9	74
[illegible]9	91
79	48
[illegible]4	99
[illegible]6	79
[illegible]6	81
[illegible]9	95
[illegible]1	91
[illegible]9	81
[illegible]3	74
[illegible]9	81
81	79

SRA Scores of Extended-Day Kindergarten Sample

80	54	65	61
44	53	95	99
95	63	58	84
54	99	86	97
53	95	99	81
91	99	99	86
97	33	95	99
81	91	99	65
97	86	56	86
91	91	99	99
81	71	56	58
99	61	43	60
99	97	74	76
97	99	89	93
74	74	76	97
93	91	48	63
61	63	76	86
65	76	65	93
93	93	86	58
58	97	89	97